REMARKS

Claims 1, 2 and 4-29 are pending in this application, with claim 3 having previously been canceled, without prejudice or disclaimer. By this Amendment, claims 1, 13, 20 and 27 have been amended to clarify the claimed subject matter. Accordingly, claims 1, 2 and 4-29 are presented for reconsideration, with claims 1, 13, 20 and 27 being in independent form.

Claims 1, 2 and 4-29 were rejected under 35 U.S.C. § 103(a) as purportedly unpatentable over U.S. Patent No. 6,580,684 to Miyake in view of U.S. Patent No. 5,835,642 to Mimnagh and further in view of U.S. Patent No. 5,740,149 to Iwasaki et al.

Applicant has carefully considered the Office Action and the cited art, and respectfully submits that independent claims 1, 13, 20 and 27 of the present application are patentable over the cited art, for at least the following reasons.

This application relates to improve techniques devised by applicant for recording to optical information recording media wherein information regarding recording conditions are preformatted on an optical information recording medium, to improve compatibility or matching between the recording medium and the recording apparatus. More specifically, recording conditional information, which includes parameters of a plurality of multipulse patterns having different applied linear velocity ranges and information regarding linear velocities capable of recording with each of the multipulse patterns, is pre-formatted on the optical information recording medium.

Since it is evident from the Office Action that there is a misunderstanding of what constitute such multipulse patterns, independent claims 1, 13, 20 and 27 have been amended to recite that one of the multipulse patterns is a 1T cycle pattern including a first front-pulse part, a first end-pulse part and a first multipulse part where the combination of the heating pulse and the

cooling pulse for the first multipulse part is set as a 1T cycle, and another one of the multipulse patterns is a 2T cycle pattern including a second front-pulse part, a second end-pulse part and a second multipulse part where the combination of the heating pulse and the cooling pulse for the second multipulse part is set as a 2T cycle, and each multipulse pattern includes a multipulse part that is preceded by a front-pulse part and followed by an end-pulse part. Each of independent claims 1, 13, 20 and 27 addresses the above-mentioned features, as well as additional features.

Miyake, as understood by Applicant, proposes an optical disc wherein physical characteristics information, such as information concerning the material, the disc type, the track pitch, the moment of inertia, and the size/configuration of the recording medium, and/or information regarding the recommended linear velocity for recording information on the recording medium, is recorded as subcode on the optical disc.

Mimnagh, as understood by Applicant, proposes an optical disc wherein velocity-related information indicative of the recording process corresponding to a recording velocity is provided on the optical disc, and is utilized during recording for adapting the recording process to the recording velocity that must actually be used.

However, as acknowledged in the Office Action, the combination of Miyake and Mimnagh does not teach or suggest an approach for recording to optical information recording media wherein recording conditional information pre-formatted on the optical information recording medium includes parameters of a plurality of multipulse patterns having different applied linear velocity ranges and information regarding linear velocities capable of recording with each of the multipulse patterns, and ***one of the multipulse patterns is a 1T cycle pattern including a first front-pulse part, a first end-pulse part and a first multipulse part where the combination of the heating pulse and the cooling pulse for the first multipulse part is set as a***

1T cycle, and another one of the multipulse patterns is a 2T cycle pattern including a second front-pulse part, a second end-pulse part and a second multipulse part where the combination of the heating pulse and the cooling pulse for the second multipulse part is set as a 2T cycle, and each multipulse pattern includes a multipulse part that is preceded by a front-pulse part and followed by an end-pulse part, as provided by the subject matter of claim 1 of the present application.

Iwasaki, as understood by Applicant, proposes an approach for optical disc recording utilizing a PWM (pulse width modulation) recording system. Iwasaki was cited in the Office Action as proposing use of a multi-pulse pattern including a 1T pattern and a 2T pattern.

Iwasaki, column 3, line 63 through column 4, line 19, which was cited in the Office Action, states as follows:

> In other words, in the data recording/regenerating method in which, by irradiating an electro-magnetic wave to a data recording medium to generate a phase change in a recording layer thereof, data is recorded in and regenerated from said data recording medium, and also in which rewriting of data is possible; when recording data in said data recording medium by modulating signals according to the PWM recording system, pulse modulation for recording when recording or rewriting a 0 signal having a signal width of nT (T: Clock time) after modulation is a continuous electromagnetic wave at a power level e; a record signal pulse array when recording or rewriting 1 signal having a signal width of nT after modulation is an electromagnetic wave pulse array comprising a pulse section fp having a time width x and a power level a, a multi-pulse section mp in which lower level pulses at a power level b having a time width of T in total and high power level pulses at a power level c alternately appear at a duty ratio of y (n-n') times in total, and a pulse section op having a time width z and a power level d,; x, y, and z satisfy the relations of 0.5 T≦x≦2 T, 0.4≦y≦0.6, and 0.5 T≦z≦1 T; n' is an integer equal to or smaller than n (n'≦n); and also controls are provided so that the relation of (a and c)>e>(b and d) is satisfied.

Iwasaki, Fig. 1, which was cited in the Office Action, is reproduced below:

FIG. 1A

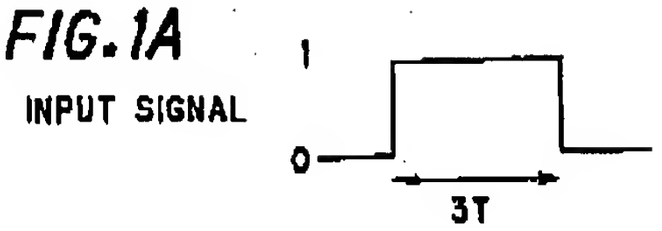
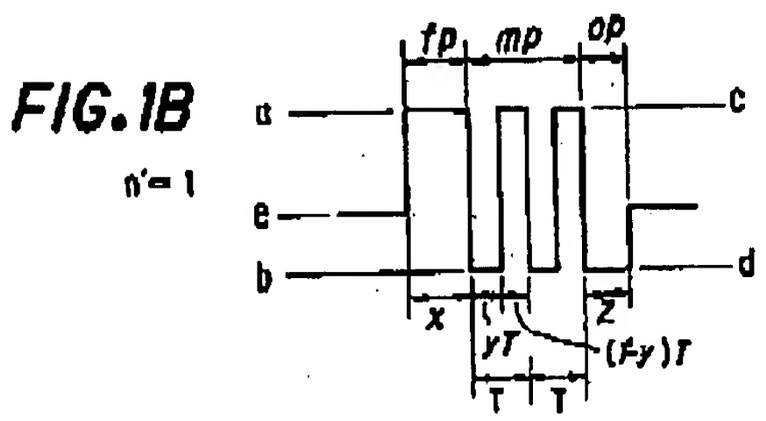
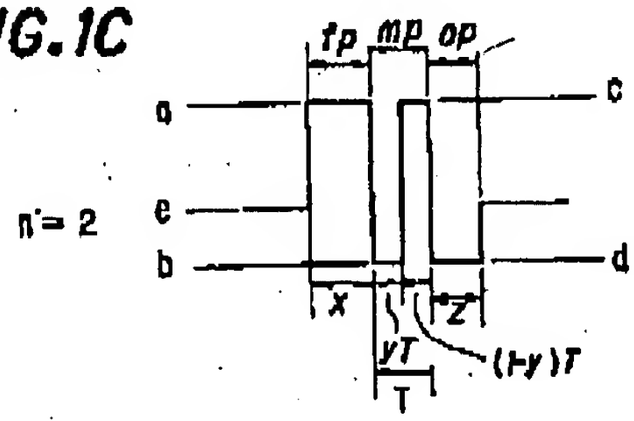


FIG. 1B



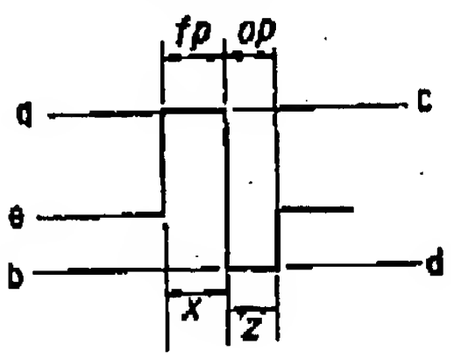
TOTAL(n-n')T=2T

FIG. 1C



TOTAL 1T

FIG. 1D



Iwasaki merely proposes an example of a pattern with the multipulse part having "total (n-n') T=2T". However, Iwasaki does not disclose or suggest a 2T cycle pattern including a part where the combination of the heating pulse (high power part) and the cooling pulse (low power part) is set as a 2T cycle.

In the subject matter of claim 1 of the present application, one of the multipulse patterns is a 1T cycle pattern including a first front-pulse part, a first end-pulse part and a first multipulse part where the combination of the heating pulse and the cooling pulse for the first multipulse part

is set as a 1T cycle, and another one of the multipulse patterns is a 2T cycle pattern including a second front-pulse part, a second end-pulse part and a second multipulse part where the combination of the heating pulse and the cooling pulse for the second multipulse part is set as a 2T cycle, and each multipulse pattern includes a multipulse part that is preceded by a front-pulse part and followed by an end-pulse part. Iwasaki does not teach or suggest such features.

Examples of such a 2T cycle pattern are shown in Figs. 3 and 4 of the present application. As discussed at pages 34-35 of the application, in the 2T cycle pattern, different patterns are used in combination corresponding to each of the time when "n" is an odd number and the time when "n" is an even number. When "n" is an even number, the pattern has the following construction: the front pulse part at the power level for heating pulse with duration x'T; the multipulse part having total ((n/2)-1) high-level pulses at the power level for heating pulse each with duration y'T and a low-level pulse at the power level for cooling pulse with duration (2-y') T between the high-level pulses; and the end pulse part at the power level for cooling pulse with duration z'T. When "n" is an odd number, the multipulse part having total (((n-1)/2)-1 high-level pulses for heating pulse each with duration y'T and the low-level pulse for cooling pulse each with duration (2-y')T between the high-level pulses.

The 2T cycle pattern having such a multipulse pattern is adapted to high-speed recording and addresses a problem that when linear velocity of recording using the multipulse pattern with a laser beam increases, a basic clock frequency becomes high and on/off time of a laser beam source cannot follow the speed.

The combination of Iwasaki, Miyake and Mimnagh simply does not teach or suggest that one of the multipulse patterns (for which conditional information is pre-formatted on the optical information recording medium) is a 1T cycle pattern including a first front-pulse part, a first end-

pulse part and a first multipulse part where the combination of the heating pulse and the cooling pulse for the first multipulse part is set as a 1T cycle, and another one of the multipulse patterns is a 2T cycle pattern including a second front-pulse part, a second end-pulse part and a second multipulse part where the combination of the heating pulse and the cooling pulse for the second multipulse part is set as a 2T cycle, and each multipulse pattern includes a multipulse part that is preceded by a front-pulse part and followed by an end-pulse part, as provided by the subject matter of claim 1 of the present application.

Independent claims 13, 20 and 27 are patentably distinct from the cited art for at least similar reasons.

Accordingly, Applicant respectfully submits that independent claims 1, 13, 20 and 27, and the claims depending therefrom, are patentable over the cited art.

In view of the remarks hereinabove, Applicant submits that the application is now in condition for allowance, and earnestly solicits the allowance of the application.

If a petition for an extension of time is required to make this response timely, this paper should be considered to be such a petition. The Office is hereby authorized to charge any fees that may be required in connection with this response and to credit any overpayment to our Deposit Account No. 03-3125.

If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

Respectfully submitted,

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